

Application Serial No. 10/811,572
Response Dated October 18, 2005
Reply to Restriction dated July 20, 2005

Remarks

Applicants have received and carefully reviewed the Office Action mailed July 20, 2005. Claims 1, 2, 30, 32 and 33 have been amended, and new claim 45 has been added. Support for the amendments and new claim can be found in the specification, claims, and drawings as originally filed. No new matter has been added. Claims 1-19, 30, 32-35, and 45 are currently pending. Claims 5-8 and 10-13 are withdrawn from consideration. Reconsideration and reexamination are respectfully requested.

Information Disclosure Statement

Applicants respectfully request the Examiner consider the references submitted with the IDS filed July 26, 2004, and return an initialed copy of the 1449 with the next Office Action.

Allowable Subject Matter

Applicants thank the Examiner for indicating that claims 15 and 34 would be allowable if rewritten to include all of the limitations of the base claim and any intervening claims.

Rejections under 35 U.S.C. § 102(b)

Claims 1-4, 9, 16, 17, 30-33, and 35 are rejected as being anticipated by Jaouen et al. (US 6,081,030). Also, claims 1-4, 9, 16-18 and 30 are rejected as being anticipated by Delgado et al. (US 5,825,092). Although Applicants respectfully disagree that claims 1-4, 9, 16, 17, 30-33, and 35 are anticipated by Jaouen et al. or Delgado et al., to move this case along, claims 1, 2, 30, 32 and 33 have been amended to be clearly patentable over the cited art. For example, claim 1 has been amended to recite:

1. (Currently Amended) A method of attaching two wafers, the method comprising:
 - providing a first wafer having a first side and a second side;
 - providing a second wafer having a first side and a second side;
 - creating at least one pit into the first side of the second wafer to define at

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least two [[a]] pillars, wherein the pit has a perimeter with perimeter walls, and the at least two pillars extend up from a bottom of the pit and are spaced inward from the perimeter walls of the pit;

adapting at least one of the pillars to conduct an electrical signal;
providing a contact pad on a first side of the first wafer;
aligning the first wafer and the second wafer such that the at least one pillar that is adapted to conduct an electrical signal corresponds to the contact pad;
attaching the first wafer to the second wafer.

As can be seen, claim 1 now recites a method in which at least one pit is created into the first side of the second wafer to define at least two pillars, wherein the pit has a perimeter with perimeter walls, and the at least two pillars extend up from a bottom of the pit and are spaced inward from the perimeter walls of the pit. Neither Jaouen et al. or Delgado et al. appear to disclose or suggest these and other method steps recited in claim 1.

Likewise, claim 30 has been amended to recite:

30. (Currently Amended) A method comprising:
providing a first wafer having a first side and a second side;
providing a second wafer having a first side and a second side;
creating at least one pit into the first side of the second wafer to define at least a first pillar and a second pillar, wherein the pit has a perimeter with perimeter walls, and the pillars extend up from a bottom of the pit and are spaced inward from the perimeter wall of the pit;
adapting the first pillar to conduct an electrical signal;
adapting the second pillar to conduct an electrical signal;
providing an electronic device having a first lead and a second lead, the first lead coupled to the first pillar and the second lead coupled to the second pillar;
providing a first contact pad and a second contact pad on a first side of the first wafer;
aligning the first wafer and the second wafer such that the first pillar corresponds to the first contact pad and the second pillar corresponds to the second contact pad;
attaching the first wafer to the second wafer.

As can be seen, claim 30 now recites a method in which at least one pit is created into the first side of the second wafer to define at least a first pillar and a second pillar, wherein the pit has a

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perimeter with perimeter walls, and the pillars extend up from a bottom of the pit and are spaced inward from the perimeter wall of the pit. Claim 30 also recites the steps of adapting the first pillar to conduct an electrical signal, adapting the second pillar to conduct an electrical signal, and providing an electronic device having a first lead and a second lead, wherein the first lead is coupled to the first pillar and the second lead coupled to the second pillar. Neither Jaouen et al. or Delgado et al. appear to disclose or suggest these and other method steps recited in claim 30.

Independent claim 32 now recites:

32. (Currently Amended) A method comprising:
providing a first wafer having a first side and a second side;
providing a second wafer having a first side and a second side;
creating at least one pit having a perimeter with perimeter walls into the first side of the second wafer to define a pillar, wherein the pillar extends up from a bottom of the pit and is spaced inward from the perimeter walls of the pit;
adapting a first region of the pillar to conduct an electrical signal;
adapting a second region of the pillar to conduct an electrical signal, the second region being substantially electrically isolated from not overlapping the first region;
providing an electronic device having a first lead and a second lead, the first lead electrically coupled to the first region of the pillar and the second lead electrically coupled to the second region of the pillar;
providing a first contact pad and a second contact pad on a first side of the first wafer; and
attaching the first wafer to the second wafer such that the first region of the pillar is electrically connected to the first contact pad and the second region of the pillar is electrically connected to the second contact pad.

As can be seen, claim 32 now recites a method in which at least one pit is created into the first side of the second wafer to define a pillar, wherein the pillar extends up from a bottom of the pit and is spaced inward from the perimeter walls of the pit. Claim 32 also recites the steps of: adapting a first region of the pillar to conduct an electrical signal; adapting a second region of the pillar to conduct an electrical signal, the second region being substantially electrically isolated from the first region; and providing an electronic device having a first lead and a second lead, the first lead electrically coupled to the first region of the pillar and the second lead electrically

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coupled to the second region of the pillar. Neither Jaouen et al. or Delgado et al. appear to disclose or suggest these and other method steps recited in claim 32.

Claim 33 has been amended to recite:

33. (Currently Amended) A method comprising:
providing a first wafer with [[the]] a circuit, the circuit including a first contact pad and a second contact pad;
providing a second wafer having a first side and a second side;
removing portions of the first side of the second wafer to define a pit having a perimeter with perimeter walls, and a pillar extending up from a bottom of the pit, wherein the pillar is spaced inward from the perimeter walls of the pit;
adapting a first region of the pillar to be electrically conductive;
adapting a second region of the pillar to be electrically conductive, the second region electrically separate from the first region;
applying a metallization layer to at least the first side of the pillar, the metallization layer defining an inductive element having a first lead and a second lead;
providing an electrical connection between the first lead and the first region;
providing an electrical connection between the second lead and the second region;
attaching the first side of the second wafer to the first wafer such that an electrical connection between the first region and the first contact pad is created and an electrical connection between the second region and the second contact pad is created.

As can be seen, claim 33 now recites a method in which portions of the first side of the second wafer are removed to define a pit, with a pillar extending up from a bottom of the pit, wherein the pillar is spaced inward from the perimeter walls of the pit. Claim 33 also recites the steps of: adapting a first region of the pillar to be electrically conductive; adapting a second region of the pillar to be electrically conductive, the second region being electrically separate from the first region; applying a metallization layer to at least the first side of the pillar, wherein the metallization layer defines an inductive element having a first lead and a second lead; providing an electrical connection between the first lead and the first region; and providing an electrical connection between the second lead and the second region. Neither Jaouen et al. or Delgado et

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al. appear to disclose or suggest these and other method steps recited in claim 33.

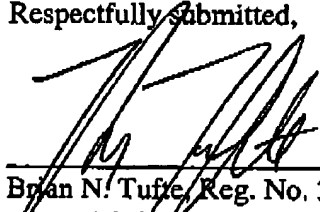
In view of the foregoing, all independent claims 1, 30, 32 and 33, as amended, are believed to be clearly patentable over the art of record. For these and other reasons, dependent claims 2-4, 9, 14-19, and 34-35 are also believed to be clearly patentable over the art of record. New claim 45 corresponds to objected to claim 15, but is rewritten in independent form. As such, new claim 45 is also believed to be in condition for allowance.

Finally, Applicant respectfully requests that withdrawn dependent claims 5-8 and 10-13 now be reconsidered and allowed, as each is dependent either directly or indirectly from an allowable independent claim.

Reconsideration and reexamination of all pending claims are respectfully requested. If a telephone interview is desired or would be of assistance, please contact the undersigned attorney at 612-359-9348.

Respectfully submitted,

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